

JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA 32899

OCT 16 1970

REPLY TO
ATTN OF: AA-RQA

OCT 29 1970


TO: Distribution

FROM: Manager, Apollo-Skylab Programs, AA

SUBJECT: OMSF Apollo Program Directive No. 31A, dated October 5, 1970,
Subject: Apollo Systems Safety Program Requirements

REFERENCE: Briefing Note to Dr. Debus from AA dated October 28, 1970,
Subject: Apollo System Safety Program Requirements, APD 31A

Revised OMSF Apollo Program Directive No. 31A has been received by this office. As noted in the attached copy of the reference, it does not require any changes to existing procedures, nor revisions to existing KSC Management Issuances. Should your review of this APD indicate otherwise, please inform this office so that appropriate action can be taken.


Thomas W. Morgan
Brigadier General, USAF

Attachments
As stated

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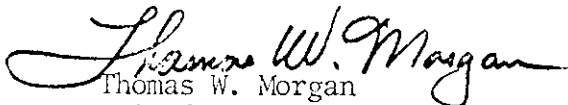
OCT 29 1970

BRIEFING NOTE

TO: Center Director, CD
FROM: Manager, Apollo-Skylab Programs
SUBJECT: Apollo System Safety Program Requirements, APD #31A

This revision to an existing Apollo Program Directive has been reviewed by this office. It has been determined that the changes reflected in this revision make actual practice a matter of official record. It does not affect or change our local Kennedy Management Instruction KMI 1710.1B/SF of October 9, 1970, Subject: "The KSC Safety Program." SF concurs with this determination.

This APD No. 31A will be given standard distribution to heads of primary and secondary organizations, along with a copy of this briefing note.


Thomas W. Morgan
Brigadier General, USAF

Enclosure: APD No. 31A

APOLLO PROGRAM DIRECTIVE NO. 31A

TO: Distribution

FROM:

Rocco A. Petrone
Rocco A. Petrone OCT 5 1970
Apollo Program Director

SUBJECT: Apollo System Safety Program Requirements

- REFERENCES:
- (a) Manned Space Flight Safety Program, NMI 1700.2
 - (b) Apollo Reliability and Quality Assurance Program Plan, NHB 5300.1A
 - (c) Reliability Program Provisions for Aeronautical and Space System Contractors, NHB 5300.4 (1A)
 - (d) Apollo Program Directive No. 44A, MA-1400.093, Apollo Program Nonconformance Reporting and Corrective Action
 - (e) OMSF Safety Program Directive No. 1A, M-D MY 1700.120, System Safety Requirements for Manned Space Flight
 - (f) NASA Safety Manual, NHB 1700.1 (VI), Volume 1, Basic Safety Requirements.

I. PURPOSE

The purpose of this directive is to implement the requirements of reference (e) as it applies to the Apollo Program.

II. AUTHORITY

The requirement for implementing a system safety program for Apollo has been established in reference (a).

III. SCOPE

This directive is applicable to all Apollo Program Office (APO) and center organizations having responsibility for the direction or performance of Apollo Program safety activities.

GENERAL

In the Apollo Program, the identification of potentially hazardous conditions and the assessment of their effect on Apollo safety is performed both at the Centers and at Headquarters. Current analysis requirements include Single Failure Point Identification, reference (b), Failure Mode Effects and Criticality Analysis, reference (c), Failure Analysis of Critical Nonconformances, reference (d), Apollo Spacecraft System Safety Assessment, reference (e), Apollo Operations Handbook Emergency Procedures, Mission Rules, Malfunction Analysis, etc., which are supplemented by reviews and assessments conducted by Apollo working groups, panels and committees. It is the purpose of the Apollo System Safety Program to prescribe the means for obtaining and evaluating the data generated by these activities which relate to potential Apollo crew and mission hazards.

IV. OBJECTIVES

The objectives of the Apollo Safety Program are to assist management to attain the overall Apollo Program goal by:

- a. Providing a systematic review process to identify hazards or potential accidents in the Apollo Program.
- b. Providing for maximum use of existing information and data in safety planning and in the identification and assessment of program hazards.
- c. Providing for analyses and the development of concepts, procedures or equipment to eliminate or reduce hazards and potential emergency situations in the Apollo Program.
- d. Assigning responsibility for coordination and integration of safety activities within the Apollo Program organization and management structure to provide for uniform and consistent effort.
- e. Providing Apollo Program management with assessments of program risks.

V. ORGANIZATION AND RESPONSIBILITIESa. Headquarters

The Apollo Program Director is responsible for safety in the Apollo Program. Program direction for implementation of the Apollo Safety Program is from the Apollo Program Director to the Center Apollo Program Managers. The Apollo Program Safety Director is responsible for:

- (1) Recommending to the Director safety policies and requirements that are commensurate with overall NASA objectives and policies.
- (2) Monitoring each Center's Safety Program performance.
- (3) Coordinating with the safety organizations of the Centers and serving as the Apollo Program focal point for periodic intercenter meetings and information exchange.
- (4) Participating in Headquarters surveys of Center safety activities.
- (5) Providing for Apollo Program Director, the current status of the Apollo Safety Program.

b. Centers

The Center Apollo Program Managers are responsible for:

- (1) Assuring Center Safety Plans are prepared that describe the safety organization reporting lines and the functional relationship with other disciplines, and identifying the tasks to be performed to satisfy the Apollo Safety Program requirements.
- (2) Developing and implementing safety requirements for major Apollo contractors to assure their participation and reporting in accordance with this directive.
- (3) Reporting to the APO those residual hazards identified with their risk acceptance rationale or corrective action implemented and schedule for completion of corrective action.
- (4) Providing assistance in the conduct of all safety program reviews performed by the Apollo Program Safety Director or OMSF safety organizations.
- (5) Enhancing intercenter relationships on Apollo program safety matters.

VI. REQUIREMENTS

- a. "System Safety Requirements for Manned Space Flight" Safety Program Directive No. 1-A, is to be implemented on the Apollo Program to the maximum practicable extent considering the Apollo Program's current state of development.

No additional safety analysis will be performed. However, the results of those analyses already undertaken are to be implemented to facilitate proper safety visibility through knowledge of residual hazards and flight anomalies. The specific areas of the Safety Program Directive No. 1 which are to be applied to the current Apollo Program are delineated in the following paragraphs:

- (1) Sections 1 and 2, Purpose and Application, apply as written.
- (2) Section 3, Definitions, applies as written. Where conflicts are noted between these definitions and those contained in current official Apollo Documentation, the Apollo definitions need not be changed.
- (3) The Requirements contained in Section 4 apply as written with the following exceptions or modifications:

Paragraph 4.1. - Existing contractor Safety Plans are acceptable if they satisfy the intent of paragraphs 4.1.1. through 4.1.3. Requirements for field center safety plans have been satisfied but will be subject to annual review by APO.

Paragraph 4.2. applies recognizing that subparagraphs 4.2.1. and 4.2.2. are not commensurate with the current development status of the Apollo Program. However, system growth in support of lunar exploration goals, such as extended lunar stay time, are to be given hazard analysis as appropriate in subparagraph 4.2.3. until completion of the program(s).

Paragraph 4.3. Hazard Reduction Precedence Sequence applies. Special attention should be given to subparagraphs 4.3.4. - (Special Procedures) and 4.3.5. - (Residual Hazards) during the remainder of the Apollo Program lunar exploration activities.

Paragraph 4.5. (Human Engineering) applies to the remainder of the Apollo Program lifecycle.

- (4) Section 5, System Safety Implementation Assurance applies as written.
- (5) Safety surveys (audits) of the Centers will be conducted annually by the Headquarters safety offices. These surveys cover program safety, as well as industrial and public safety. The Centers will also conduct safety audits of their contractors as described in Section 5.3.

- b. Safety Analysis Report. The NASA Safety Manual (NHB 1700.1), reference (f), established a requirement for the submission of a safety analysis report (SAR). For Apollo, this will be an APO report in memorandum form and will contain key problems which may affect crew safety plus a discussion of items the Apollo Program Director considers significant. The purpose of this report is to document safety concerns for discussion at the Administrator's briefing prior to each mission.